UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/964,191	09/26/2001	Isao Kakuhari	29288.2700	1298

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EXAMINER
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ART UNIT	PAPER NUMBER
2615	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/25/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

PTOL-90A (Rev. 10/06)

	Application No.	Applicant(s)
Office Action Summary	09/964,191	KAKUHARI ET AL.
	Examiner	Art Unit
	Daniel R. Sellers	2615

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _26 October 2006_.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-24_ is/are pending in the application.

    4a) Of the above claim(s) _19-23_ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-18 and 24_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _26 September 2001_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2.   **Claims 1-3, 7-17 and 24** are rejected under 35 U.S.C. 103(a) as being

unpatentable over McGrath (USPN 6021206).

3.   Regarding **claim 1**, McGrath teaches a signal processing apparatus for

processing an acoustic signal reproduced together with an image signal (Col. 4, lines

57-63 and Col. 10, lines 14-29), the signal apparatus comprising:

a memory for storing a plurality of filter coefficients for correcting the acoustic

signal (Col. 6, lines 28-61 and Fig. 3 teaches different filters for creating three-

dimensional audio and inherently have a memory for storing the alterable transfer

functions, which define where audio signals are positioned in a 3D space);

a filter coefficient selection section for receiving a correction command, from

outside the signal processing apparatus, for specifying a correction method for the

acoustic signal and selecting at least one of the plurality of filter coefficients stored in

the memory based on the correction command (Col. 5, lines 38-61, Col. 7, lines 18-51,

and Fig. 1 teaches that a head tracking device (5) and (9) that sends a signal to a

correction section to correct the rotation of the sound stage with respect to the rotation

of a listener's head. Col. 9, line 60 - Col. 10, line 3 teaches pre-computed coefficients for the FIR filters in Fig. 4 and Fig. 1, unit 8); and

a correction section for correcting the acoustic signal using the at least one filter coefficient selected by the filter coefficient selection section so as to correct any discrepancies in the relationship between the acoustic signal and the image signal being reproduced together (Col. 5, lines 38-61 and Col. 7, lines 18-51 teaches that the correction section fixes the location of a sound source in 3d space and updates the acoustic signal when the head is rotated).

McGrath teaches the above features, but does not specifically state that the calculations computed by the rotation matrix calculation section (7) are stored in memory for selection by the correction section. McGrath teaches FIR filters, which have variable transfer functions (Col. 6, lines 56-61), and further teaches that pre-computed coefficients can be used for the FIR filters in a different section, the correction section (Fig. 1, unit 8, Fig. 4, and Col. 9, line 60 - Col. 10, line 3). It would have been obvious for one of ordinary skill in the art at the time of the invention to combine the teachings of pre-computed coefficients within the rotation matrix calculation section for the purpose of reducing computational time. One would be motivated to reduce the computational time of a device, so that a less costly, lower powered, or the like could be used to achieve the goals taught by McGrath.

4. Regarding **claim 2**, the further limitation of claim 1, see McGrath

... wherein the correction command is input to the signal processing apparatus by receiving of a broadcast signal or a communication signal. (Col. 7, lines 18-20)

McGrath teaches that a communication signal is sent from the headphone apparatus to

be received by the signal processing apparatus, or rotation matrix calculation means.

5.   Regarding **claim 3**, the further limitation of claim 1, see the preceding argument

with respect to claim 1. McGrath teaches a device, wherein the correction command's

can be precomputed (Col. 9, lines 63-65).

6.   Regarding **claim 7**, the further limitation of claim 1, see McGrath

... wherein:
   the at least one filter coefficient selected includes at least one filter coefficient representing a
transfer function showing an acoustic characteristic of a direct sound from a sound source to a
viewer/listener, (Col. 6, lines 28-55) *and*
   the correction section includes a transfer function correction circuit for correcting a transfer
function of the acoustic signal in accordance with the at least one filter coefficient representing the
transfer function.(Col. 7, lines 18-51).

McGrath teaches these features.

7.   Regarding **claim 8**, the further limitation of claim 1, see the preceding argument

with respect to claim 7. McGrath teaches the reflection structure as ceiling and floor

level data, reverberation control data, and delay control data. It is inherent in the

structure of filters that multiplication and addition is performed in view of column 3, lines

37-48. Furthermore it is inherent that the reflection component output is added to the

filtered signal output in parallel or series.

8.   Regarding **claim 9**, the further limitation of claim 1, see the preceding argument

with respect to claim 7. McGrath teaches the use of floor and ceiling parameters, delay

control data, and reverberation control data (Col. 6, line 56-61). McGrath also teaches

that the reflection characteristic is added after filtering (Fig. 3, units 31, 35, and 50-53).

9.   Regarding **claim 10**, the further limitation of claim 1, see the preceding argument

with respect to claim 2. McGrath teaches a simulated acoustic space, which is

automatically selected by the media being played back (Col. 6, lines 28-55). McGrath also teaches a manual selection, wherein users head is rotated or moved (Col. 5, lines 38-61).

10.   Regarding **claim 11**, the further limitation of claim 8, see the preceding argument with respect to claim 7. McGrath teaches different delays, or distances, for different reflection characteristics (Col. 6, lines 43-55).

11.   Regarding **claim 12**, the further limitation of claim 9, see the preceding argument with respect to claim 11. McGrath teaches at least two different coefficients corresponding to different distances.

12.   Regarding **claim 13**, the further limitation of claim 8, see the preceding argument with respect to claim 11. McGrath teaches a third coefficient representing a reflection from a direction in a predetermined range.

13.   Regarding **claim 14**, the further limitation of claim 9, see the preceding argument with respect to claim 13. McGrath teaches a plurality of reflection structures, wherein there is a third coefficient representing a reflection from a direction in a predetermined range.

14.   Regarding **claim 15**, the further limitation of claim 13, McGrath teaches a signal processing device with all the features of claim 13. Specifically, McGrath teaches a specific location or direction of reflected sound, wherein it is inherent the angle between the angles of incidence and reflection is 15 degrees or less (Col. 6, lines 43-61).

15.   Regarding **claim 16**, the further limitation of claim 14, see the preceding argument with respect to claim 15. McGrath teaches this feature.

16.   Regarding **claim 17**, the further limitation of claim 1, see the preceding argument

with respect to claim 1. McGrath teaches a multi-channel acoustic signal and a filter

coefficient section corresponding to each of the signals.

17.   Regarding **claim 24**, the further limitation of claim 1, see the preceding argument

with respect to claim 1. McGrath teaches a correction section that corrects the acoustic

signal using at least one filter coefficient from memory.

18.   **Claims 4-6** are rejected under 35 U.S.C. 103(a) as being unpatentable over

McGrath as applied to claim 1 above, and further in view of Tanaka et al. (USPN

5598478) (hereinafter Tanaka).

19.   Regarding **claim 4**, the further limitation of claim 1, see McGrath

... wherein the memory is arranged so as to receive at least one filter coefficient for correcting the
acoustic signal from outside the signal processing apparatus, and to add the at least one filter coefficient
received to the plurality of filter coefficients stored in the memory or to replace at least one of the plurality
of filter coefficients stored in the memory with the at least one filter coefficient received. (Col. 9, line 60
- Col. 10, line 3).

McGrath teaches a method of receiving precomputed coefficients, and/or equalization

templates. However McGrath does not teach receiving filter coefficients for correcting

the acoustic signal from outside the signal processing apparatus. Tanaka teaches

receiving the filter coefficients from a CD-ROM (Col. 13, lines 3-59 and Fig. 2). It would

have been obvious for one of ordinary skill in the art at the time of the invention to

combine the teachings of McGrath and Tanaka for the purpose of providing matched

HRTF's for a large group of people.

20.   Regarding **claim 5**, the further limitation of claim 4, see the preceding argument

with respect to claim 4. McGrath teaches a system where the coefficients outside the

signal processing apparatus are obtained from reproduction of the recording medium.

21.   Regarding **claim 6**, the further limitation of claim 5, see McGrath. McGrath

teaches an audio signal processing device that has video processing capabilities (Col.

4, lines 57-63 and Col. 10, lines 22-30). It is inherent that the speed into the buffer is

higher than the speed out for the purpose of uninterrupted playback and

synchronization. It is inherent that the filter coefficient(s) are stored in the memory while

the image and video are being output from the buffer for the purpose of filtering the

audio, otherwise it would defeat the purpose of using a filter structure. Furthermore, it is

inherent that the time period required for the buffer to be output is equal to a time period

for the coefficient(s) to be in memory so that the filter, with the coefficient(s), processes

the entirety of the data signal.

22.   **Claim 18** is rejected under 35 U.S.C. 103(a) as being unpatentable over

McGrath as applied to claim 1 above, and further in view of Saito et al., U.S. Patent No.

3,766,547 (hereinafter Saito).

23.   Regarding **claim 18**, the further limitation of claim 1, see Saito

*... further comprising a display section for displaying a distance between a sound source and a
viewer/listener.* (Col. 1, lines 55-64, and Col. 2, lines 6-23).

McGrath teaches all the features of claim 1, but does not teach a display device wherein

a distance between a sound source and a user is displayed. Saito teaches a display

device with this feature in a multichannel environment. It would have been obvious for

one of ordinary skill in the art to combine the teachings of McGrath and Saito for the

purpose of visual feedback with respect to balance and fade controls, which are well

known in the art.

Response to Arguments

24.   Applicant's arguments with respect to claims 1-18 and 24 have been considered

but are moot in view of the new ground(s) of rejection.

Conclusion

25.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure.

        Cashion et al. (USPN 5809149) - teaches look up tables for different filters

(abstract).

26.   Applicant's amendment necessitated the new ground(s) of rejection presented in

this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37

CFR 1.136(a).

        A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel R. Sellers whose telephone number is 571-272-7528. The examiner can normally be reached on Monday to Friday, 9am to 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on (571)272-7564. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DRS

DANIEL SWERDLOW
PRIMARY PATENT EXAMINER